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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,510	06/26/2003	John Roberts	WEAT/0393	4809

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EXAMINER

BOMAR, THOMAS S

ART UNIT	PAPER NUMBER
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3672

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,510

Applicant(s)

ROBERTS, JOHN

Examiner

Shane Bomar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-11, 13-17, 19, 21-26 and 28-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-11, 13-17, 19, 21-23, 26, 28-30 and 32-42 is/are rejected.
- 7) ☒ Claim(s) 24, 25 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/28/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: amended claim 1 states that the sonic wave generator comprises a solid state device, although the phrase “solid state device” was never used as a description of the sonic wave generator, nor was the phrase found anywhere in the specification.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 2,948,059 to Bodine in view of US patent 6,009,948 to Flanders et al.

Regarding claim 1, Bodine teaches a back-off tool for use in the tubular member disposed inside a wellbore that comprises a housing 103 and at least one sonic wave generator 102 mounted within the housing (see Figs. 2-3, col. 7, lines 33-37 and col. 8, lines 50-56). It is not, however, taught that the sonic wave generator comprises a solid-state device as is currently claimed.

Flanders et al teach a sonic wave generator for use in the tubular member disposed inside a wellbore that comprises a housing similar to that of Bodine (see Fig. 1 and Summary of the Invention in columns 2-3). It is further taught that the sonic wave generator comprises a solid-state device since a piezoelectric device is well known as a solid-state device (see col. 8, lines

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46-48). It would have been obvious to one of ordinary skill in the art, having the teachings of Bodine and Flanders et al before him at the time the invention was made, to modify the sonic wave generator taught by Bodine to include the solid-state device of Flanders et al, in order to obtain a device that can generate sufficient energy to vibrate the tubular member. One would have been motivated to make such a combination since Flanders et al have shown that piezoelectric devices are suitable equivalents of an electromechanical device (see col. 8, lines 36-48 of Flanders et al), wherein the device of Bodine is electromechanical (see col. 6, lines 51-66 of Bodine). A further motivation for combining these references is the fact that Bodine teaches another application for the device is to remove stuck pipe in a wellbore (see col. 2, lines 13-19 of Bodine), which is an important application of the Flanders et al device (see col. 3, lines 12-15 of Flanders et al).

4. Claims 2-5, 7, 11, 13, 14, 16, 17, 21, 26, 28, and 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodine in view of Flanders et al as applied to claim 1 above, and further in view of US patent 5,037,524 to Juvan.

The combination applied to claim 1 above teaches a back-off tool with a sonic wave generator that comprises a solid-state device. It is not, however, explicitly taught that the solid-state device is one of a piezoelectric ceramic and a stack of piezoelectric plates.

Juvan teaches a sonic wave generator that comprises a solid-state device similar to that of the combination (see col. 17, lines 23-26 and col. 25, lines 14-17). It is further taught that the solid-state device is one of a piezoelectric ceramic and a stack of piezoelectric plates (see col. 24, lines 65-67 and col. 25, lines 42-56). It would have been obvious to one of ordinary skill in the art, having the teachings of the combination and Juvan before him at the time the invention was

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made, to modify the solid-state device taught by the combination to include the solid-state device that is one of a piezoelectric ceramic and a stack of piezoelectric plates of Juvan, in order to obtain an increase in operating efficiency, as taught by Juvan. One would have been motivated to make such a combination since Juvan has shown it to be notoriously known in the solid-state sonic wave generator art to use at least one of a piezoelectric ceramic and a stack of piezoelectric plates as the solid-state device in order to increase operating efficiency and to extend the life of the system (see col. 17, lines 23-26 and col. 25, lines 14-17).

Regarding claims 3, 5, 11, 13, 16, and 39-41, the combination and motivation applied to claim 2 above analogously teaches an apparatus and method for loosening a threaded connection joining an upper portion and a lower portion of a tubular member, and a back-of tool for use in the tubular member disposed inside a wellbore that comprises: a housing 103; a wireline C for lowering the tool through the tubular member (see Fig. 3 of Bodine); a power supply for delivering signals (see col. 8, lines 1-7 of Bodine); and at least one sonic wave generator mounted within the housing, wherein the sonic wave generator is at least one of a piezoelectric ceramic and a stack of piezoelectric plates (see col. 24, lines 65-67 and col. 25, lines 42-56 of Juvan).

Regarding claim 4, the combination applied to claim 3 above teaches that a controller is electrically connected to the generator, wherein the controller is configured to vary at least one of amplitude, frequency, and resonance of the pressure wave (see col. 9, lines 44-49 of Bodine).

Regarding claims 7 and 17, the combination applied to claims 5 or 16 above teaches that the sonic waves are configured to loosen the threaded connection (see col. 1, lines 15-18).

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Regarding claims 14, 21, and 26, the combination applied to claims 11 or 16 above teaches that the method or apparatus further comprises means for applying a reverse torque to the tubular (see col. 9, lines 9-19 of Bodine).

Regarding claim 28, the combination applied to claim 26 above teaches that the method further comprises activating the back-off tool to generate the sonic waves (see col. 8, lines 33-42 of Bodine).

Regarding claims 32 and 35-38, the combination applied to claims 1 or 26 above teaches that the waves can be constant or variable (see col. 9, lines 20-74 of Bodine).

Regarding claim 33, the combination applied to claim 26 above teaches that the method further comprises retrieving the upper portion from the wellbore (see col. 6, lines 37-43 of Bodine).

Regarding claim 34, the combination applied to claim 26 above teaches that the method further comprises generating the plurality of sonic waves (see col. 1, lines 15-18 of Bodine) and inherently retrieving the back-off tool since it is well known in the art to retrieve tools after use to avoid junk in the well.

5. Claims 8-10, 19, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodine in view of Flanders et al and Juvan as applied to claims 1, 5, or 16 above, and further in view of US patent 6,012,521 to Zunkel et al.

The combination applied to claims 1, 5, or 16 above teaches the method and apparatus for loosening a threaded connection using a sonic wave generator in a wellbore. It is not taught that there are two or more wave generators positioned at two or more locations, wherein the two or more generators are positioned so that a combination of the waves is greater than the plurality of

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waves from one generator, or that the two generators are configured to be activated simultaneously or at predefined times.

Zunkel et al teaches a wave generator similar to that of the combination. It is further taught that there are more than two wave generators, the combined waves from the generators is substantially greater than the waves from one generator, and that the two generators are configured to be activated simultaneously or at predefined times (see col. 11, lines 35-54). It would have been obvious to one of ordinary skill in the art, having the teachings of the combination and Zunkel et al before him at the time the invention was made, to modify the method and apparatus taught by the combination to include the two or more wave generators of Zunkel et al. One would have been motivated to make such a combination since Zunkel et al have shown it to be notoriously known in the art that pressure (i.e., sonic) wave generators spaced apart in a work string will have an additive wave field intensity.

6. Claims 15, 22, 23, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodine in view of Flanders et al and Juvan as applied to claims 11, 16, or 26 above, and further in view of US patent 2,305,261 to Kinley.

Regarding claims 15, 22, and 29, the combination applied to claims 11, 16, or 26 above teaches the method and apparatus for loosening a threaded connection using a sonic wave generator in a wellbore. It is not taught that the method or apparatus further comprises means for setting the tubular to a neutral weight position at the threaded connection above a sticking condition.

Kinley teaches a method and apparatus for loosening a threaded connection similar to that of the combination. It is further taught that the tubular is set to a neutral weight position at the threaded connection (see page 1, col. 1, lines 51-54 and page 2, col. 1, lines 50-54). It would have been obvious to one of ordinary skill in the art, having the teachings of the combination and Kinley before him at the time the invention was made, to modify the method and apparatus taught by the combination to include the means for setting the tubular to a neutral weight position of Kinley. One would have been motivated to make such a combination in order to relieve the threaded connection of the weight of the string, as taught by Kinley.

Regarding claims 23 and 30, the combination applied to claims 22 and 29 above can also be applied to these claims because the neutral weight position would inherently be moved up or down the tubular member in accordance with the position of the stuck condition.

Allowable Subject Matter

7. Claims 24, 25, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 3, 5, 11, 16, and 26 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion


9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gill et al, Hoyle et al, Shinohara et al, and Upton teach other sonic devices demonstrating the level of the skill in the art.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is 571-272-7026. The examiner can normally be reached on Monday - Thursday from 7:00am to 4:30pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


David J. Bagnell
Supervisory Patent Examiner
Art Unit 3672

tsb 
May 24, 2005